NEW WORK ITEM PROPOSAL	
Date of presentation 1999-05-25	Reference number (to be given by secretariat)
Proposer DIN(Germany)	ISO/TC 8 /SC 9 N 15
Secretariat JISC/JMSA	

A proposal for a new work item (including proposals for amendment or revision of an existing standard) **within the scope of an existing technical committee or subcommittee** shall be submitted to the secretariat of that technical committee or subcommittee with a copy to the Central Secretariat and, in the case of a sub-committee, a copy to the secretariat of the parent technical committee. The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information. The proposer may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General. Guidelines for proposing and justifying a new work item are given in the ISO/IEC Directives (part 1, annex Q) (see extract overleaf).

The proposal (to be completed by the proposer)

Title of proposal (in the case of an amendment or revision, or a new part, of an existing standard, show the standard number)

Ships and marine technology - Terms, abbreviations and graphical symbols on navigation

Scope (as defined in 6.2.1 of part 3 of the ISO/IEC Directives)

This standard is to be used in maritime navigation. Navigation is the process of position finding as well as planning, recording and controlling the movement of a craft or vehicle from one place to another

Purpose and justification (attach a separate page as annex, if necessary)

The draft attached is a revision of DIN 13312, it is a very comprehensive document which would be useful to adopt it as an International Standard. The draft contains terms, abbreviations and graphical symbols, which are useful, but they should not be used in mathematics formulas. Symbols for use in mathematics formulas are mentioned if necessary.

Target date (indicate the date by which the availability of the International Standard is considered to be necessary)

Relevant documents to be considered

Relationship of project to activities of other international bodies

Liaison organizations	**Need for coordination within ISO and IEC**
IMO	ISO/TC12, ISO/TC20

Preparatory work

- ☒ A draft is attached
- ☐ An outline is attached and it will be possible to supply a draft by (date)
- ☒ Proposed project leader (name and address):

H. -Ch. Schade (Geschäftsführer), Normenstelle Schiffs - und Meerestechnik (NSMT) im DIN, Bramfelder Sr. 164, D - 22305 Hamburg

Concerns known patented items (see part 2 of the ISO/IEC Directives) ☐ yes ☐ no If YES, provide full information as annex	Signature of the proposer Mr. H. -Ch. Schade

Date of circulation	Closing date for voting	Signature of the TC or SC secretary
1999-05-25	1999-08-25	S. Arikawa

Comments and recommendations of the TC or SC secretariat

Comments with respect to the proposal in general, and recommendation thereon
(Indicate any issues to be brought to the notice of committee members. For instance, refer to any associated vote on form 5 regarding adoption of any attached draft for direct progression to CD or DIS.)

Elements to be clarified when proposing a new work item (new standard)

Title

Indicate the subject matter of the proposed new standard.

Scope

Give a clear indication of the coverage of the proposed new work item and, if necessary for clarity, exclusions.

Purpose and justification

Give details based on a critical study of the following elements wherever practicable.

a) The specific aims and reason for the standardization activity, with particular emphasis on the aspects of standardization to be covered, the problems it is expected to solve or the difficulties it is intended to overcome.

b) The main interests that might benefit from or be affected by the activity, such as industry, consumers, trade, governments, distributors.

c) Feasibility of the activity: Are there factors that could hinder the successful establishment or general application of the standard?

d) Timeliness of the standard to be produced: Is the technology reasonably stabilized? If not, how much time is likely to be available before advances in technology may render the proposed standard outdated? Is the proposed standard required as a basis for the future development of the technology in question?

e) Urgency of the activity, considering the needs of other fields or organizations. Indicate target date and, when a series of standards is proposed, suggest priorities.

f) The benefits to be gained by the implementation of the proposed standard; alternatively, the loss or disadvantage(s) if no standard is established within a reasonable time. Data such as product volume or value of trade should be included and quantified.

g) If the standardization activity is, or is likely to be, the subject of regulations or to require the harmonization of existing regulations, this should be indicated.

If a series of new work items is proposed, the purpose and the justification of which is common, a common proposal may be drafted including all elements to be clarified and enumerating the titles and scopes of each individual item.

Relevant documents

List any known relevant documents (such as standards and regulations), regardless of their source. When the proposer considers that an existing well-established document may be acceptable as a standard (with or without amendments) indicate this with appropriate justification and attach a copy to the proposal.

Cooperation and liaison

List relevant organizations or bodies with which cooperation and liaison should exist.

Preparatory work

Indicate whether the proposer or the proposer's organization is prepared to undertake the preparatory work required for the new work item.

Date: 22 December 1998

ISO/WD 0806 NWI

ISO/TC 8/SC 6

Secretariat: DIN

Navigation — Terms, abbreviations and graphical symbols

Navigation — Définitions, abréviations et symboles graphiques

Document type: International Standard
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Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Navigation — Terms, abbreviations and graphical symbols

0 General principles

0.1 Scope

This standard is to be used in maritime navigation.

Navigation is the process of position finding as well as planning, recording and controlling the movement of a craft or vehicle from one place to another.

0.2 Purpose

This standard sheet contains terms, abbreviations and graphical symbols, which are used in maritime navigation. The application of abbreviations is useful, but they should not be used in mathematic formulas. Symbols for use in mathematic formulas are mentioned if necessary.

1 Special units in maritime navigation

Item No.	Name of unit	International symbol for unit	Definition, conversion factors and remarks
1.1	**Unit of length**		
	nautical mile	NM in charts: M *	1 NM = 1 852 m. The nautical mile is not a SI-unit. This definition was adopted by the First International Hydrographic Conference in 1929 (see ISO 31-1; 1-3a).
1.2	**Unit of velocity and speed**		
	knot, knots	kn	$1\ \text{kn} = 1\ \frac{\text{NM}}{\text{h}} = 0{,}514444\ \frac{\text{m}}{\text{s}}$; (see ISO 31-1; 1-10b and Chart 1) Velocity is a vector quantity, whereas speed is a scalar having magnitude only.
1.3	**Unit of angle**		
	degree	°	$1° = \frac{\pi}{180}$ rad $1' = \frac{1°}{60}$ (see ISO 31-1; 1-1c) In maritime navigation angles should be specified in degrees, minutes and decimals of minutes; (example: write 17° 40,25' not 17° 40' 15").

* Symbol M is to be used in Charts according to the "Chart Specifications of the IHO", which came into force at the XIIth International Hydrographic Conference 1982 in Monaco.

2 Reference directions

Item No.	Name of the term	Abbreviation	Definition, remarks
2.1	**North directions**		North directions are horizontal reference directions.
2.1.1	true north	TN	Northerly direction of the meridian (see 7.1.12).
2.1.2	magnetic north	MN	Northerly direction of the horizontal component of the earth's magnetic field (see 12.2).
2.1.3	compass north	CN	Northerly direction of the needle or zero-index of a magnetic compass.
2.1.4	gyro north	GN	Northerly direction indicated by the gyro-compass 000°-index.
2.2	dead ahead		Direction ahead of the ship's fore-and-aft line.

3 Course, heading, track, speed

Item No.	Name of the term	Abbre-viation	Definition, remarks
3.1	**Course, heading**	CRS, HDG	Course and heading are angles, measured in the horizontal plane from one of the reference directions specified in part 2, counted clockwise from 000° through 360°, written as three digit numbers.
3.1.1	true course course to steer —	TC CTS	The intended direction of movement of the ship, defined by the angle between the meridian through its position and the fore-and-aft line of the ship, expressed in angular units from true north (000°).
3.1.2	true heading	TH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between the meridian through its position and the fore-and-aft line of the ship, expressed in angular units from true north (000°).
3.1.3	magnetic course	MC	The intended direction of movement of the ship, defined by the angle between the magnetic meridian (see 12.3) through its position and the fore-and-aft line of the ship, expressed in angular units from magnetic north (000°).
3.1.4	magnetic heading	MH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between the magnetic meridian through its position and the fore-and-aft line of the ship, expressed in angular units from magnetic north (000°).
3.1.5	compass course	CC	The intended direction of movement of the ship, defined by the angle between compass north (see 2.1.3) and the fore-and-aft line of the ship, expressed in angular units from compass north (000°).
3.1.6	compass heading	CH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between compass north and the fore-and-aft line of the ship, expressed in angular units from compass north (000°).
3.1.7	gyro course	GC	The intended dirction of movement of the ship, defined by the angle between gyro north (see 2.1.4) and the fore-and-aft line of the ship, expressed in angular units from gyro north (000°).
3.1.8	gyro heading	GH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between gyro north and the fore-and-aft line of the ship, expressed in angular units from gyro north (000°).

Item No.	Name of the term	Abbre-viation	Definition, remarks
3.1.9	course through water	CTW	Direction of the ship's movement through the water, defined by the angle between the meridian through its position and the direction of the ship's movement through the water, expressed in angular units from true north.
3.1.10	course of advance course to make good	COA	Direction from the ship's last fix (see 7.2.5) to the next estimated position (see 7.2.3), expressed in angular units from true north.
3.1.11	course over ground	COG	Direction of the ship's movement relative to the earth, measured on board of the ship.
3.1.12	course made good	CMG	Rhumb line direction (see 7.2.10.1) between two fixes (see 7.2.5).

3.2 Track

The term "track" is used

a) as the path of voyage with respect to the earth or water as plotted in the chart, expressed in angular units from true north (000°) clockwise through 360°; to distinguish rhumb line track (see 7.2.10) and great circle track (see 7.2.9),

b) as the path of radar-targets on a plan position indicator (see 13.4).

Item No.	Name of the term	Abbre-viation	Definition, remarks
3.2.1	water track	WT	Path of the ship's movement through the water.
3.2.2	ground track	GT	Intended path of the ship's movement over ground.
3.2.3	true track	TT	Actual path of the ship's movement relative to the earth.
3.2.4	track made good	TMG	True track between two fixes.
3.3	Speed		
3.3.1	speed	SPD	Own ship's speed in dead ahead direction.
3.3.2	speed through water	STW	Speed of the ship relative to the water surface.
3.3.3	speed of advance speed to make good	SOA	Estimated speed of the ship relative to the earth.
3.3.4	speed over ground	SOG	Speed of the ship relative to the earth, measured on board of the ship.
3.3.5	speed made good	SMG	Speed of the ship between two fixes.

3 Course, heading, track, speed

Item No.	Name of the term	Abbre-viation	Definition, remarks
3.1	**Course, heading**	CRS, HDG	Course and heading are angles, measured in the horizontal plane from one of the reference directions specified in part 2, counted clockwise from 000° through 360°, written as three digit numbers.
3.1.1	true course course to steer ---	TC CTS	The intended direction of movement of the ship, defined by the angle between the meridian through its position and the fore-and-aft line of the ship, expressed in angular units from true north (000°).
3.1.2	true heading	TH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between the meridian through its position and the fore-and-aft line of the ship, expressed in angular units from true north (000°).
3.1.3	magnetic course	MC	The intended direction of movement of the ship, defined by the angle between the magnetic meridian (see 12.3) through its position and the fore-and-aft line of the ship, expressed in angular units from magnetic north (000°).
3.1.4	magnetic heading	MH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between the magnetic meridian through its position and the fore-and-aft line of the ship, expressed in angular units from magnetic north (000°).
3.1.5	compass course	CC	The intended direction of movement of the ship, defined by the angle between compass north (see 2.1.3) and the fore-and-aft line of the ship, expressed in angular units from compass north (000°).
3.1.6	compass heading	CH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between compass north and the fore-and-aft line of the ship, expressed in angular units from compass north (000°).
3.1.7	gyro course	GC	The intended dirction of movement of the ship, defined by the angle between gyro north (see 2.1.4) and the fore-and-aft line of the ship, expressed in angular units from gyro north (000°).
3.1.8	gyro heading	GH	Actual direction in which the longitudinal axis of the ship is pointed, defined by the angle between gyro north and the fore-and-aft line of the ship, expressed in angular units from gyro north (000°).

4 Bearings

Bearing (BRG) is an angle measured in the horizontal plane from one of the reference directions specified in Part 2, measured clockwise from 000° through 360° written as three digit numbers.

Item No.	Name of the term	Abbre-viation	Definition, remarks
4.1	**Optical bearings**		
4.1.1	true bearing	TB	Angular distance from true north (000°) to the object.
4.1.2	magnetic bearing	MB	Angular distance from magnetic north (000°) to the object.
4.1.3	compass bearing	CB	Angular distance from compass north (000°) to the object.
4.1.4	gyro bearing	GB	Angular distance from gyro north (000°) to the object.
4.1.5	relative bearing	RB	Angular distance from the ship's dead ahead direction (see 2.2) of the object. With the addition "right" (starboard) or "left" (port) semicircle counting from 000° through 180° is allowed.
4.2	**Radio bearings**		
4.2.1	relative radio bearing	q *	Angle between the ship's dead ahead direction (see 2.2) and the measured direction to a radio beacon from where the radio waves come, determined by a radio detection finder (RDF).
4.2.2	corrected relative radio bearing	p *	Angle between the ship's dead ahead and the great circle direction (see 7.2.9.1) to a radio beacon, after elimination of the errors of the radio bearing.
4.2.3	true radio bearing		Sum of true heading and corrected relative radio bearing. Angle between true north and the great circle direction to a radio beacon.
4.3	**Radar bearings** (see 13.2)		
4.3.1	relative radar bearing		Angle between heading line and bearing line on a plan position indicator (ppI). Semicircle counting with the addition "right" (starboard) or "left" (port) from 000° to 180° is allowed.
4.3.2	true radar bearing		Sum of true heading (see 3.1.2) and relative radar bearing. Angle between true north and the direction of the bearing line on a plan position indicator (ppI).
4.3.3	gyro radar bearing		Sum of gyro heading (see 3.1.8) and relative radar bearing. Angle between gyro north and the direction of the bearing line on a plan position indicator.

* Formula symbol

5 Corrections

The numerical value of a correction is the best estimate which can be made of the difference between the true and the measured value of a parameter. The sign is such that a correction which is to be added to an observed reading is taken as positive.

Item No.	Name of the term	Abbre-viation	Definition, remarks
5.1	variation	Var	Angle between true north and magnetic north, from true north eastwards named E (sign plus), westwards named W (sign minus).
5.2	deviation	Dev	Angle between magnetic north and compass north, from magnetic north eastwards named E (sign plus), westwards named W (sign minus).
5.3	total compass error correction	CE	Sum of variation and deviation. Angle between true north and compass north, from true north eastwards named E (sign plus), westwards named W, (sign minus).
5.4	speed error correction	δ_{Gy} *	Correction of the gyro heading error, which depends on position, speed and course of the ship; sign plus when the ship moves southwards, sign minus, when the ship moves northwards.
5.5	gyro error correction	GE	Correction of all errors (including speed error) of a gyro compass. Angle between true north and gyro north, from true north eastwards with sign plus, westwards with sign minus.
5.6	gyro-R		Correction of the measured error of a gyro compass indication without speed error (gyro residual aberration).
5.6.1	gyro-A		Correction of the constant part of gyro-R; meanvalue of measured gyro-R values.
5.7	leeway angle		Angular difference between the course through water and course to steer (CTW - TC).
5.8	drift angle		Angular difference between the course of advance and course through water (COA - CTW).
5.9	leeway and drift angle		Angular difference between the course of advance and course to steer (COA - TC); sum of leeway angle and drift angle.
5.10	radio deviation	f *	Angular difference between the great circle direction to the radio beacon and the direction from where the radio waves come; f = p - q (see 4.2.1 and 4.2.2).
5.11	conversion angle	u *	Angular difference between the rhumb line and the great circle (see 7.2.10 and 7.2.9) between two points on the earth.

* Formula symbol

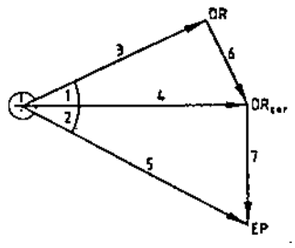
6 Influence of wind and current

6.1 Wind

NOTE Wind direction is the direction from where the movement of the air comes from. The vector of this movement is in opposite direction of the wind direction; for instance: The movement of the air is in the direction of 270° (direction of the vector in weather charts) in case of east wind.

Item No.	Name of the term	Definition, remarks
6.1.1	true wind	Velocity of the air (speed and direction) relative to a fixed point on the earth.
6.1.2	speed wind	Volocity of the air only caused by the ship's motion relative to the earth.
6.1.3	apparent wind relative wind	Velocity of the air relative to the moving ship; Vector of true wind plus vector of speed wind is equal to the vector of apparent wind.

6.2 Leeway and drift triangle



⊕ Last Fix (see 7.2.5)
1 Leeway angle (see 5.7)
2 Drift angle (see 5.7)
3 Own ship's velocity (see 6.2.1)
4 Water track (see 6.2.3)
5 Ground track (see 6.2.5)
6 Leeway vector (see 6.2.2)
7 Drift vector (see 6.2.4)

DR Dead reckoning position (see 7.2.1)

DR_{cor} Corrected dead reckoning position (see 7.2.2) (Sea position)

EP Estimated position (see 7.2.3)

Item No.	Name of term	Definition of the vector	Item No.	Magnitude of vector	Abbre-viation	Item No.	Direction of vector	Abbre-viation
6.2.1	own ship's velocity	own ship's velocity	6.2.1.1	speed (3.3.1)	SPD	6.2.1.2	course to steer (3.1.1)	CTS TC
6.2.2	leeway vector	ship's velocity due to influence of wind	6.2.2.1	leeway drift		6.2.2.2	leeway set	
6.2.3	water track	ship's velocity relative to the water	6.2.3.1	speed through water (3.3.2)	STW	6.2.3.2	course through water (3.1.9)	CTW
6.2.4	drift vector	horizontal velocity of the water surface	6.2.4.1	drift		6.2.4.2	set	
6.2.5	ground track	ship's velocity relative to the earth	6.2.5.1	speed of advance (3.3.3)	SOA	6.2.5.2	course of advance (3.1.10)	COA

7 Geographical coordinates, positions, lines, graphical symbols

Item No.	Name of the term	Abbre-viation	Definition, remarks
7.1	**Geographical coordinates**		
7.1.1	horizontal geodetic datum		A set of parameters specifying the reference coordinate system used for geodetic control in the calculation of coordinates of points on the earth.
7.1.2	World Geodetic System 84	WGS 84	A global geodetic reference system developed by the USA for satellite position fixing and recommended by the IHO for hydrographic and cartographic use.
7.1.3	latitude geograhic latitude	φ LAT	Angular distance from the equator (00°) measured northwards or southwards through 90° and labelled N or S to indicate the direction of measurement.
7.1.4	longitude geographic longitude	λ LON	Angle at the pole between the prime meridian (000°) (see 7.1.13) and the meridian of a point on the earth, measured eastwards or westwards from the prime meridian through 180° and labelled E or W to indicate the direction of measurement *.
7.1.5	geodetic latitude		Angular distance between the plane of the geodetic equator and the normal to a station on the earth ellipsoid, measured from the equator (00°) northwards or southwards through 90° and labelled N or S.
7.1.6	geodetic longitude		Angle between the plane of the geodetic prime meridian (000°) and the plane of the station's geodetic meridian, measured eastwards or westwards from the prime meridian through 180° and labelled E or W *.
7.1.7	geocentric latitude		Angle at the center of the reference ellipsoid between the celestial equator (see 10.1.2.4) and the radius vector to a point on the ellipsoid, measured from the equator (00°) northwards or southwards through 90° and labelled N or S.
7.1.8	geocentric longitude		Angle between the plane of the geocentric prime meridian (000°) and the plane of the station's geocentric meridian, measured eastwards or westwards from the prime meridian through 180° and labelled E or W *.
7.1.9	astronomical latitude		Angular distance between the plane of the celestial equator (00°) and the station's plumb line, measured northwards or southwards through 90° and labelled N or S.
7.1.10	astonomical longitude		Angle between the plane of the prime meridian and the plane of the station's celestial meridian (see 10.1.2.8), measured eastwards or westwards, from the prime meridian through 180° and labelled E or W *.

* The planes of geographic, geodetic, geocentric and astronomical meridians are identical.

Item No.	Name of the term	Abbre-viation	Definition, remarks
7.1.11	parallel of latitude		A circle on the earth's surface parallel to the equator.
7.1.12	meridian		Great circle through the geographical poles of the earth; north-south-reference line.
7.1.13	prime meridian		The reference meridian 000°; origin for measurement of longitude; also called meridian of Greenwich.
7.1.14	difference of latitude	d.lat	The shorter arc of any meridian between the parallels of two places, expressed in angular measure.
7.1.15	distance of latitude	b *	Distance on a meridian between two parallels of latitude, expressed in nautical miles.
7.1.16	difference of longitude	d.lon	The shorter arc of a parallel between the meridians of two places, expressed in angular units.
7.1.17	distance of longitude on equator	l *	Distance on equator between two meridians, expressed in nautical miles.
7.1.18	mean latitude	Lm	Half of the sum of the latitudes of two places, expresses in angular units.
7.1.19	departure	Dep a *	Distance between two meridians at any given parallel of latitude, expresses in nautical miles the distance to the east or west made good or to make good in proceeding from one point to another.
7.1.20	meridional parts	Φ *	The length of the arc of a meridian between the equator and a given parallel on a Mercator chart, expressed in units of 1' of longitude on the equator.
7.1.21	meridional difference	$\Delta\Phi$ *	The difference of the meridional parts of any two given parallels.
7.2	**Positions and lines**		
7.2.1	dead reckoning position	DR	Estimated position of a vessel obtained by adding to the last fix (see 7.2.5) the ship's true course (course to steer) and own speed (see 6.2).

* Formula symbol

Item No.	Name of the term	Abbre-viation	Definition, remarks
7.2.2	corrected dead reckoning position; sea position	DR_{cor}	Estimated position of a vessel obtained by adding to the last fix the ship's course and speed through water (see 6.2.3.1).
7.2.3	estimated position	EP	Most probable position of a vessel obtained by adding to the last fix the ship's course and speed of advance, considering all estimated influence, including current (see 6.2).
7.2.4	assumed position	AP	Estimated position for astronomical sight reduction (see 10.2.13).
7.2.5	fix	Fix	Ship's position determined without reference to any other former position.
7.2.6	North pole	P_N	North geographical pole.
7.2.7	South pole	P_S	South geographical pole.
7.2.8	equator		Primary great circle of the earth.
7.2.9	great circle	GC	The intersection of a sphere on the earth and a plane through its center; also called orthodrome.
7.2.9.1	great circle direction		Horizontal direction of a great circle, expressed as an angular distance from true north (00°) at ship's position.
7.2.10	rhumb line	RL	Line on the surface of the earth forming the same angle with all meridians; strait line on a Mercator chart; also called loxodrome.
7.2.10.1	rhumb line direction		Horizontal direction of a rhumb line, expressed as angular distance from true north (000°) at ship's position.
7.2.11	course line		Graphic representation of a ship's intended course to make good.
7.2.12	line of position	LOP	A plotted line on which a ship is located.
7.2.13	transferred line of position		Line of position transferred in the direction of the course line by distance sailed.
7.2.14	line of equal bearings		Line of equal bearings of an object.
7.2.15	line of equal altitudes		Line of equal angular distances of the center of a celestial body above the celestial horizon (see 10.2.14).

7.3 Graphical symbols

Graphical symbols, abbreviations and terms, which are used on charts on board of ships, are published in Chart INT 1. This chapter lists the symbols for those terms, which are used in this standard.

Item No.		Definition, remarks
7.3.1	Symbols for chartwork on board	
7.3.1.1	——————→	Line of position (see 7.2.12); arrowhead points towards the object.
7.3.1.2	—·—·—→	Transferred line of position (see 7.2.13); arrowhead points towards the object.
7.3.1.3	+	Estimated or dead reckoning position, annotated with time in four digit notation in parentheses; e.g. (0715).
7.3.1.4	⊕ or ⊙	Fix (see 7.2.5); annotated with time in four digit parentheses; e. g. 0715.

8 Waypoint navigation

Item No.	Name of the term	Abbre-viation	Definition, remarks
8.1	**Points**		
8.1.1	port (or point) of departure		The port (or point) where a voyage begins.
8.1.2	destination	Dest	The geographic point to which a craft is navigating. It may be the next waypoint along a route of waypoints or the final destination of a voyage.
8.1.3	waypoint	Wpt	Point on a route (see 8.2.3).
8.1.3.1	waypoint distance	WpD	Distance to a waypoint
8.1.3.2	waypoint bearing	WpB	Bearing of a waypoint
8.1.4	vertex		The point on a great circle nearest to the north or south pole.
8.2	**Distances**		
8.2.1	great circle distance orthodromic distance	D_G	Distance between two points on a great circle.
8.2.2	rhumb line distance loxodromic distance	D_L	Distance between two points on a rhumb line.
8.2.3	route	RTE	Intended ground track (see 3.2.2) between two waypoints.
8.2.4	distance to go	DTG	Distance on the route to the next waypoint or to destination.
8.2.5	distance to steam		Distance to the next waypoint or destination to be steamed by the vessel relative to the water.

Item No.	Name of the term	Abbre-viation	Definition, remarks
8.2.6	cross track error cross track distance	XTE XTD	Position error (distance) perpendicular to the ground track (see 3.2.2).
8.2.7	along track error	ATE	Position error in the direction of the ground track.
8.2.8	fix adjustment		Vector from the estimated position (see 7.2.3) to the fix (see 7.2.5).
8.3	**Time**		
8.3.1	estimated time of arrival	ETA	The predicted time of reaching a destination or waypoint.
8.3.2	time to go	TTG	The predicted time difference to reach a destination or waypoint from the present position.

9 Terms of time

Item No.	Name of the term	Abbre-viation	Definition, remarks
9.1	**Universal terms of time**		
9.1.1	International Atomic Time	TAI	The time reference coordinate established by the Bureau International de l'Heure (BIH) on the basis of atomic clocks.
9.1.2	Universal Time	UT	Time as defined by the rotational motion of the earth and determined from the apparent diurnal motions, which reflect this rotation. Because of variations in the rate of rotation Universal Time is not rigorously uniform.
9.1.3	Universal Time 0	UTO	The uncorrected time of the earth's rotation as measured by the transit of stars across the observer's meridian. This rotation is referred to a fiducial mark on the ecliptic which approximates the position of the mean sun.
9.1.4	Universal Time One	UT1	UTO corrected for polar motion. Mean solar time of the prime meridian (see 7.1.13), measured from midnight through 24 hours due to the observed motion of the geographic pole; used in astronomical navigation.
9.1.5	Universal Time Two	UT2	UT1 corrected for seasonal variations in the earth rotation.
9.1.6	Universal Time Coordinated	UTC	The time scale that is available from most broadcast time signals. It differs from TAI (see 9.1.1) by an integral number of seconds. UTC is maintained within one second of UT1 by the introduction of 1-second-steps (leap seconds) when necessary, normally at the end of December.

Item No.	Name of the term	Abbre-viation	Definition, remarks
9.1.7	DUT1	DUT1	Approximation to the difference UT1 minus UTC, transmitted in codes on broadcast signals.
9.1.8	Standard time		The legally established time for a given zone.
9.1.9	Greenwich Mean Time	GMT	Former time scale; sometimes still used if difference between UTC and UT1 is not important. Local mean time (see 9.2.2) at the Greenwich meridian (see 7.1.13).
9.2	**Terms of time for navigation use**		
9.2.1	local apparent time	LAT	The arc of the celestial equator between the lower branch of the local celestial meridian (see 10.1.2.10) and the hour circle of the true sun, measured westwards from the lower branch of the local celestial meridian through 24 hours.
9.2.2	local mean time	LMT	The arc of the celestial equator between the lower branch of the celestial meridian and the hour circle of the mean sun, measured westwards from the lower branch of the local celestial meridian through 24 hours.
9.2.3	equation of time		The difference at any instant between local apparent and local mean time (LAT – LMT).
9.2.4	zone time	ZT	The local mean time of a reference or zone meridian, whose time is kept throughout a designated zone. The zone meridian is usually the nearest meridian whose longitude is exactly divisible by 15°.
9.2.5	chronometer time		The time as indicated by a chronometer.
9.2.6	chronometer correction	CC	The amount that must be added algebraically to the chronometer time to obtain UT. Chronometer correction is numerically equal to the chronometer error, but of opposite sign.
9.2.7	difference of longitude in time		Difference of longitude (see 7.1.16) divided by earth's angular velocity 15°/h.
9.2.8	zone description		Time difference between zone time and UTC.
9.2.9	meridian passage	MP	The passage time of a celestial body across the Greenwich hour circle.

10 Astronomical navigation

10.1 Celestial coordinates, points, lines and angles on the celestial sphere

Item No.	Name of the term	Abbre-viation	Definition, remarks
10.1.1	points of the celestial sphere		
10.1.1.1	zenith	Z	The point of the celestial sphere vertically overhead.
10.1.1.2	nadir	Na	The point of the celestial sphere vertically below the observer.
10.1.1.3	celestial poles	P_n, P_s	Points of intersection of the celestial sphere and the extended axis of the earth, labeled N and S.
10.1.1.4	elevated pole		The celestial pole above the horizon.
10.1.1.5	depressed pole		The celestial pole below the horizon.
10.1.1.6	cardinal points		Any of the four principal directions, north, east, south and west.
10.1.1.7	north	N	The primary reference direction relative to the earth, indicated by true north = 000° (see 2.1.1).
10.1.1.8	east	E	The direction 090° to the right of north.
10.1.1.9	south	S	The direction 180° from north.
10.1.1.10	west	W	The direction 270° to the right of north or 090° to the left of north.
10.1.1.11	Aries, vernal equinox	ν	The point of intersection of the ecliptic and the celestial equator, occupied by the sun as it changes from south to north declination.
10.1.1.12	autumnal equinox	Ω	The point of intersection of the ecliptic and the celestial equator, occupied by the sun as it changes from north to south declination, also called "First point of Libra".
10.1.2	great and small circles		
10.1.2.1	celestial horizon		The circle of the celestial sphere formed by the intersection of the celestial sphere and a plane through the center of the earth and perpendicular to the zenith-nadir line.
10.1.2.2	parallel of altitude		A circle of the celestial sphere parallel to the celestial horizon, connecting all points of equal altitudes; also called circle of equal altitudes.
10.1.2.3	vertical circle		A great circle of the celestial sphere through the zenith and nadir.
10.1.2.3.1	principal vertical		The vertical circle passing through the north and south celestial poles.

Item No.	Name of the term	Abbre-viation	Definition, remarks
10.1.2.3.2	prime vertical		The vertical circle perpendicular to the principal vertical. The intersection of the prime vertical with the horizon define the east and west points of the celestial horizon.
10.1.2.4	celestial equator		The primary great circle of the celestial sphere, everywhere 90° from the celestial poles.
10.1.2.5	parallel of declination		A circle of the celestial sphere parallel to the celestial equator.
10.1.2.6	hour circle		A great circle through the celestial poles.
10.1.2.7	Greenwich hour circle		Hour circle on the celestial sphere projected from the prime meridian (see 7.1.13).
10.1.2.8	Celestial meridian		A great circle of the celestial sphere through the celestial poles, zenith and nadir.
10.1.2.9	upper branch		The half of a celestial meridian from pole to pole through the zenith.
10.1.2.10	lower branch		The half of a celestial meridian from pole to pole through the nadir.
10.1.2.11	north meridian		Vertical circle through the north-point.
10.1.2.12	south meridian		Vertical circle through the south-point.
10.1.3	altitudes and angular distances on the celestial sphere		
10.1.3.1	true altitude	h	Angular distance of the center of a celestial body above the celestial horizon.
10.1.3.2	azimuth	Zn	The horizontal direction of a celestial point, expressed as the angular distance from true north (000°) clockwise through 360°.
10.1.3.2.1	azimuth angle	Z	Azimuth measured from true north clockwise eastwards or anticlockwise westwards through 180°.
10.1.3.3	declination	d, dec	The arc of an hour circle between the celestial equator and a point on the celestial sphere, measured northwards or southwards from the celestial equator (00°) through 90° and labeled N (sign +) or S (sign -) to indicate the direction of measurement.
10.1.3.4	local hour angle	LHA	The angle at the celestial pole between the upper branch of the local celestial meridian and the hour circle of a point on the celestial sphere, measured westwards from the local celestial meridian (000°) through 360°.

Item No.	Name of the term	Abbre-viation	Definition, remarks
10.1.3.4.1	meridian angle (East)	t_E	Angle at the celestial pole between the upper branch of the local celestial meridian and the hour circle of a celestial body, measured eastwards; from the local celestial meridian through 180°.
10.1.3.4.2	meridian angle (West)	t_W	Angle at the celestial pole between the upper branch of the local celestial meridian and the hour circle of a celestial body, measured westwards from the local celestial meridian through 180°.
10.1.3.4.3	local hour angle of Aries	LHA ♈	The angle at the celestial pole between the upper branch of the local celestial meridian and the hour circle of Aries, measured westwards from the local celestial meridian (000°) through 360°.
10.1.3.5	Greenwich hour angle	GHA	Local hour angle at longitude 000°.
10.1.3.5.1	Greenwich hour angle of Aries	GHA ♈	Angle at the celestial pole between the Greenwich hour circle and the local hour angle of Aries, measured westwards from the Greenwich hour circle (000°) through 360°.
10.1.3.6	siderial hour angle	SHA	The angle at the celestial pole between the hour circle of Aries and the hour circle of a point at the celestial sphere, measured westwards from the hour circle of Aries (000°) through 360°.
10.1.3.7	right ascension	RA	360° – SHA
10.1.3.8	navigational triangle		Celestial triangle formed on the celestial sphere by the great circles connecting the elevated pole, zenith of the observer's (assumed) position and a celestial body.
10.1.3.9	parallactic angle	X	The angle between a body's hour circle and its vertical circle on the celestic sphere.
10.1.3.10	zenith distance	z	The arc of a vertical circle between the zenith and a point of the celestial sphere, measured from the zenith through 90° for bodies above the horizon.
10.1.3.11	meridian altitude		Altitude of a celestial body on the celestial meridian (see 10.1.2.8).
10.1.3.12	polar distance	p	The arc of an hour circle between a celestial elevated pole and a point on the celestial sphere, measured from the celestial pole through 90°.

10.2 Sight reduction

Sight reduction is the process of deriving from a sight the information needed for establishing a line of position (7.2.12)

Item No.	Name of the term	Abbre-viation	Definition, remarks
10.2.1	visible horizon		The line where sky and earth appear to meet, and the projection of this line upon the celestial sphere.
10.2.2	sextant altitude	h_s	Altitude as indicated by a sextant before corrections are applied.
10.2.3	index correction	IC	The correction due to the error in the reading of a sextant equal to the difference between the zero of the scale and the zero of the index.
10.2.4	sextant altitude above the visible horizon		Altitude of a celestial body after index correction has been applied.
10.2.5	sensible horizon		The circle of the celestial sphere formed by the intersection of the celestial sphere and a plane through the observer's eye, which is perpendicular to the zenith-nadir line.
10.2.5.1	geoidal horizon		The circle of the celestial sphere formed by the intersection of the celestial sphere and a plane through a point on the sea level surface of the earth, which is perpendicular to the zenith-nadir line.
10.2.6	parallax in altitude	PinA	Geocentric parallax of a celestial body; the difference in the direction of the body due to the displacement of the observer from the center of the earth. The expression is used to distinguish the given altitude from the parallax in horizon (see 10.2.7).
10.2.7	parallax in horizon	HP	Parallax in altitude when the body is in the sensible horizon (see 10.2.5).
10.2.8	refraction correction	R	Correction to a sextant altitude due to the atmospheric refraction.
10.2.9	dip of the horizon	D	The vertical angle at the observer's eye between the sensible horizon and the line of sight to the visible horizon.
10.2.10	height of eye	HE	Height of the observer's eyes over the water surface.
10.2.11	apparent altitude		Corrected sextant altitude (see 10.2.2) including all corrections, IC, PinA, R and D.
10.2.12	semidiameter	SD	Half the angle at the observer subtended by the visible disk of a celestial body.

Item No.	Name of the term	Abbre-viation	Definition, remarks
10.2.13	assumed position	AP	A point on the surface of the earth at which a vessel is assumed to be located and for which the computed altitude is determined in the solution of a celestial observation.
10.2.14	observed altitude	H_o	Corrected sextant altitude; angular distance of the center of a celestial body above the celestial horizon of an observer measured along a vertical circle through 90°; also called "true altitude".
10.2.15	computed altitude	H_c	Altitude of the center of a celestial body determined by tables or computation as an arc on a vertical circle of the celestial sphere from the celestial horizon.
10.2.16	altitude intercept	$H_o - H_c$	The difference in minutes between the observed and the computed altitude, labelled + (towards) and – (away), as the observed altitude is greater or smaller than the computed altitude.

10.3 Symbols of celestial bodies and sextant altitudes

10.3.1	Celestial bodies	
10.3.1.1	☉	sun
10.3.1.2	☾	moon
10.3.1.3	★	star
10.3.1.4	♀	Venus
10.1.3.5	♁	Earth
10.1.3.6	♂	Mars
10.1.3.7	♃	Jupiter
10.1.3.8	♄	Saturn

10.3.2 Sextant altitudes

REMARK A limb is the upper or lower edge of an observed celestial body.

10.3.2.1	⊙‾	upper limb (sun)
10.3.2.2	☾‗	lower limb (moon)
10.3.2.3	—★—	center of a celestial body (star or planet)

11 Depth of water and tides

Item No.	Name of the term	Abbre-viation	Definition, remarks
11.1	**Depth datas**		
11.1.1	depth of water		Distance between water surface and ground.
11.1.2	depth below keel		Distance between keel and ground.
11.1.3	depth below transducer		Distance of transducer from ground.
11.1.4	chart datum	CD	The vertical datum to which depths and drying heights on a chart are referred.
11.1.5	chart depth		The vertical distance from the chart datum to the ground.
11.2	**Heights and times of tide**		
11.2.1	tide		The periodic rise and fall of the surface of oceans, bays, etc. due principally to the gravitational interactions between the moon, sun and earth.
11.2.2	tidal wave		The wave motion of tides.
11.2.3	flood rising tide		The rise of tide beginning at low water and ending at the following high water.
11.2.4	ebb falling tide		The fall of tide beginning at high water and ending at the following low water.
11.2.5	tidal stream		The horizontal movement of the water, caused by gravitational interactions between the moon, sun and earth. REMARK Current is the non-tidal horizontal movement of the water surface due mainly to meteorological, oceanographical or topographical causes.
11.2.5.1	flood stream		Tidal stream towards land.
11.2.5.2	ebb stream		Tidal stream towards sea, away from land.
11.2.6	springs spring tides		Tides of increased range occurring semimonthly as the result of the moon being new or full.
11.2.7	neaps neap tides		Tides of decreased range occurring semimonthly as the result of the moon being in first or last quadrature.
11.2.8	age of phase inequality age of tide		The time interval between new or full moon and the maximum effect of these phases upon the rise of tide.
11.2.9	high water	HW	The highest level reached at a place by the water surface in one oscillation, also called high tide.
11.2.9.1	high water height	HWH	Height of high water above chart datum.

Item No.	Name of the term	Abbre-viation	Definition, remarks
11.2.9.2	mean high water springs	MWMS	The average height of the high waters of spring tides, also called spring high water.
11.2.9.3	mean high water neaps	MHWN	The average height of the high waters of neap tides, also called neap high water.
11.2.9.4	high water time	HWT	Time of high water.
11.2.10	low water	LW	The lowest level reached at a place by the water surface in one oscillation, also called low tide.
11.2.10.1	low water height	LWH	Height of low water above chart datum.
11.2.10.2	mean low water springs	MLWS	The average height of the low waters of spring tides, also called spring low water.
11.2.10.3	mean low water neaps	MLWN	The average height of the low water of neap tides, also called neap low water.
11.2.10.4	low water time	LWT	Time of low water.
11.2.11	duration of rise		Time interval from low water to high water.
11.2.12	duration of fall		Time interval from high water to low water.
11.2.13	rise of tide		Difference between low water height and next high water height.
11.2.14	fall of tide		Difference between high water height and next low water height.
11.2.15	range of tide		Mean value of rise of tide and fall of tide.
11.2.16	height of tide	H	Vertical distance from the chart datum to the water surface at any stage of the tide.
11.3	**Special points in Admirally Tide Tables (A. T. T.)**		
11.3.1	standard port	StP	Selected point with daily predictions of times and heights of high and low water.
11.3.2	secondary port	SecP	Point with mean time and height differences of high and low water referring to a standard port.

12 Terrestrial magnetism

Item No.	Name of the term	Abbre-viation	Definition, remarks
12.1	flux of terrestrial magnetism	F	Total intensity of the magnetic field of the earth (in Tesla) at compass' position.
12.2	horizontal intensity	H	Horizontal component of F.
12.3	magnetic meridian		A line of horizontal magnetic force of the earth in the direction to magnetic north (see 2.1.2).
12.4	vertical intensity	Z	Vertical component of F; positive in nadir-direction.
12.5	magnetic equator		Line of all points, where Z = 0.
12.6	magnetic dip, inclination	I, Φ	Vertical angle between F and H, expressed in angular units, from – 90° through + 90°.
12.7	magnetic pole		Either of two places on the earth, where the inclination is – 90° or + 90°.
12.7.1	artic pole		Magnetic pole near the geodetic north pole; here is I = + 90°.
12.7.2	antarctic pole		Magnetic pole near the geodetic south pole; here is I = – 90°.
12.8	variation	Var	Angle between the geographic and the magnetic meridians at any place of the earth (see 5.1).
12.9	deviation	Dev	Angle between the magnetic meridian and the axis of a compass card, expressed in degrees east or west to indicate the direction in which the northern end of the compass card is offset from magnetic north (see 5.2).
12.10	deviation coefficients	A, B, C, D, E	Mathematical expression for the deviation at any heading: $Dev = A + B \cdot \sin \alpha + C \cdot \cos \alpha + D \cdot \sin 2\alpha + E \cdot \cos 2d$ α = Compass Heading (CH)

13 Radar navigation

Item No.	Name of the term	Abbre-viation	Definition, remarks
13.1	**Displays and Radar targets on the plan position indicator (PPI)**		
13.1.1	True motion	TM	Radar targets on the PPI are in true bearings (see 4.1.1) relative to the earth (ground stabilized motion) or relative to the water surface (sea stabilized motion).
13.1.2	Relative motion	RM	Radar targets on the PPI are in relative bearings (see 4.1.5), from 000° through 360°.
13.1.2.1	Head up		Relative motion; 000° of the PPI indicates true heading (see 3.1.2) not stabilized display.
13.1.2.2	Course up		Relative motion; 000° of the PPI indicates true course (see 3.1.1) compass stabilized display.
13.1.2.3	North up		Relative motion; 000° of the PPI indicates true north (see 2.1.1) or gyro north (see 2.1.4) compass stabilized display.
13.1.3	Center display	CD	Own ship's position always stays at the selected position (e. g. in the centre) of the PPI.
13.1.4	Off-centering	OffCent	Off-centering own ship's position to a display position selected with the marker.
13.2	**Markers and lines on the plan position indicator (PPI)**		
13.2.1	range rings		Rings of equal distances from the own ship.
13.2.2	variable range marker	VRM	Variable line of distances from the own ship.
13.2.3	heading line	HL	Line which points in the direction of own true heading (see 3.1.2).
13.2.4	electronic bearing line	EBL	Line of equal bearings on the PPI.
13.2.5	target vector		Line with vector of velocity (speed and direction) on a target.
13.3	**Control elements**		
13.3.1	automatic frequence control	AFC	The technique of automatically maintaining the frequency of a receiver.
13.3.2	sensitive time control	STC	An electronic circuit designed to reduce automatically sensitivity to nearby targets; also called "Anti Clutter Sea" or "Sea".
13.3.3	fast time constant	FTC	A type of coupling circuit used in radar receivers to permit discrimination against received pulses of longer duration; hereby only the leading edge of a target having a long time duration is displayed on the PPI, e. g. in case of rain-targets; also called "Anti Clutter Rain" or "Rain".

Item No.	Name of the term	Abbre-viation	Definition, remarks
13.4	**Plotting**		
13.4.1	Automatic Radar Plotting Aids	ARPA	A computer assisted radar dataprocessing system which generates predicted ship vectors (see 13.2.5) based on the plotted position; it must satisfy requirements with respect to detection, acquisition, tracking, display, warnings, data display and trial manoeuvres.
13.4.2	acquisition		The process of selecting a target and initiating its tracking (see 13.4.3).
13.4.3	tracking		The process of observing the sequential changes in the position of radar targets to establish their motion.
13.4.4	true track of target	TT	The apparent path of a target obtained by the vectorial combination of the target's relative motion through water (when sea stabilization) or over ground (when ground stabilization) and own ship's motion, expressed in knots and in angular distance from true north (000°) through 360° in case of True motion display (see 13.1.1).
13.4.4.1	true speed of target		Speed of TT
13.4.4.2	true course of target		Course of TT
13.4.5	relative track of target	RT	The path of a target on relative motion display (Head up, Course up or North up), expressed in knots and in angular distance from true north or from gyro north in case of North up display (see 13.1.2.3) or from true heading or true course (000°) in case of Head up or Course up display (see 13.1.2.1 and 13.1.2.2).
13.4.5.1	relative speed of target		Speed of RT
13.4.5.2	relative course of target		Course of RT
13.4.6	past track		Past positions of a target on the PPI.
13.4.7	guard zone		Zone on the PPI for automatic acquisitions, limited by two guard rings and limit lines.
13.4.8	target overflow		Maximum number of targets which are to be acquired automatically; no further acquisition is possible.

Item No.	Name of the term	Abbre-viation	Definition, remarks
13.4.9	target loss		A target, which has been tracked, disappears from the PPI.
13.4.10	target swap		Exchange of memory dates between two near targets.
13.4.11	vectors on the PPI		
13.4.11.1	W ——— O		Vector of own ship's movement from W (way) to O (original position of target).
13.4.11.2	O ——— A		Vector or relative motion of the target from O to A (arrived position).
13.4.11.3	W ——— A		Vector of target's true movement from W to A.
13.5	**Passage**		
13.5.1	Closest passing approach	CPA	Expected closest passage distance (in NM) to the target which is been tracked.
13.5.2	Time to closest point of approach	TCPA	The time interval (in min) to reach the expected point of closest passing approach.

14 LORAN-C

Item No.	Name of the term	Abbre-viation	Definition, remarks
14.1	time difference	TD	Time difference between the reception of equal pulse groups from a master and a secondary station of a LORAN-C chair.
14.2	group repetition interval	GRI *	Time interval between the same pulse groups of the master and secondaries of a LORAN-C chain, expressed in microseconds.
14.3	GSI-designator	GRI *	Designator for the LORAN-C chains. Group repetition interval (in µs) divided by 10 µs.
14.4	baseline length, baseline time travel	BLL BTT	Time required for the master signal to travel to the secondary, expressed in µs.
14.5	Emission Delay	ED	Total elapsed time from the master transmission until the secondary emission of pulse groups.
14.6	Coding Delay	CD	Emission Delay minus baseline length; ED – BLL.
14.7	Additional Secondary Factor	ASF	Correction in addition the transmission time of a LORAN-C signal over a composite land-water path when the signal transit time is based on the velocity over sea, expressed in µs.

* It is important to distinguish between GRI in fivedigit numbers with the unit µs and GRI in fourdigit numbers without unit.

15 Global Positioning System (GPS)

Item No.	Name of the term	Abbre-viation	Definition, remarks
15.1	Selective availability	SA	Method to degrade the accuracy of GPS-signals by introducing controlled errors.
15.2	Dilution of precision	DOP	A parameter relating the precision of the position provided by a positioning system to that of the "observed quantities" directly measured by the system. DOP is a measure of the influence of loci on the precision of position fixing. DOP is frequently used with a qualifying term, such as geometric, horizontal, vertical, etc., to indicate that DOP is related to all or some unknown quantities.
15.2.1	Geometric dilution of precision	GDOP	Geometric factor that degrade the accuracy of position fixes from those satellites which form a space.
15.2.2	Positional dilution of precision	PDOP	Reciprocal value of a tetrahedon volume formed by the own fix and the four satellites which are been used for three-dimensional fixing.
15.2.3	Horizontal dilution of precision	HDOP	Horizontal part of PDOP; reciprocal planimeter formed by the four satellites which are been used for horizontal fixing.

16 Further abbreviations used in navigation

Item No.	Abbreviation	Name of the term
16.1	ADF	Automatic direction finder
16.2	AIS	Automatic identification system
16.3	CEP	Circular error probable
16.4	dRMS	Distance root mean square
16.5	DSC	Digital Selective Call
16.6	ECDIS	Electronic chart and display information system
16.7	ENC	Electronic navigational chart
16.8	EPIRB	Emergency position-indication radio beacon
16.9	GLONASS	Global orbiting navigation satellite system
16.10	GMDSS	Global maritime distress and safety system
16.11	RDF	Radio Direction Finder
16.12	ROT	Rate of turn
16.13	SCC	Ship Control Center
16.14	SNR	Signal-to-noise ratio
16.15	VTS	Vessel traffic services

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[6] Hill, C. H. F.: Navigational terms. Nautical Briefing, Seaways, Feb. 81, S. 13 — 15; The nautical institut London

As far as the development and the contents of this proposal is concerned, we would like to bring the following facts to SC 9 member's attention:

In 1995, Germany had made an application for such a project in ISO/TC 12(Quantities, units, symbols, conversion factors), which had been actually supported by Austria, Belgium, Czech Republic, Sweden, Turkey and the USA, but for which ISO/TC12 finally rejected the responsibility on the grounds of not being the competent committee. Considering the importance of the planned specifications for the international navigation, the inclusion of the aeronautics has now been renounced with and an immediate assignment to navigation been carried out.

The standard is meant to unambiguously lay down the usual terms and to eliminate any uncertainties, which also exist in the English terms.

The elaboration is based on examples for the application used by the manufacturers of navigational aids and was discussed and dealt with within the framework of the maritime commission of the DGON (Deutsche Gesellschaft für Ortung und Navigation e.V.) and the maritime educational establishments of Germany.

However, it is recommended to have the proposal been checked by experts whose mother tongue is English.

Moreover, after completion of this standard, terms applied in the field of integrated navigational systems, integrated bridge systems, electronical sea charts, automatic course control could possibly be adopted as a 2nd part.

Likewise, after completion of the standard, a relevant harmonization with other traffic areas (aviation, ground transportation etc.) could also be striven for.